JCAA/JG-PP Lead-Free Solder Testing for High-Reliability Applications

Proposal to Field (Flight) Test Selected Pb-free Solders

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Proposal to Field (Flight) Test Pb-free Solder

- Scope:
  - To validate lead free-solder performance in the real world environment outside the lab.
  - To identify any problems that will be encountered at the DoD depots in the transition from tin-lead solders to lead-free solders.

- Concept:
  - Utilize 3 circuit cards in each 4 different zones on the aircraft (TBD.)
  - Select 5 parts of various packaged part types (3).
  - Remove and replace parts with the 3 Pb-free solders utilized in the JCAA/JG-PP Lead-Free Solder Testing Project.
  - Install the test assets in an aircraft environment combining vibration, mechanical shock, thermal cycling and altitude changes and fly the lead free soldered parts for one year.
  - Perform periodic visual inspections to verify that there are not any joint integrity issues.
  - At the end of the year perform destructive analysis of the circuit cards.

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- Projected Costs (worst case):
  - Materials
    - $3,270.00
  - Parts
    - $2,766.00
  - Test Assets
    - $70,482.00
  - Flight Testing
    - $12,000,000.00
  - Visual Inspection and Operational Testing
    - $70,7000.00
- Total Cost
    - $12,147,218.00

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